

WHAT IS CLAIMED IS

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1. An image forming apparatus comprising:  
a light source portion emitting a plurality of  
light beams;

a photoconductive body having an image forming  
10 surface;

a deflecting unit deflecting the plurality of light  
beams from the light source portion to simultaneously  
scan the image forming surface of the photoconductive  
body; and

15 a controller controlling the plurality of light  
beams to form an evaluation chart on the image forming  
surface of the photoconductive body,

said evaluation chart including first patterns and  
second patterns,

20 in the first pattern, with respect to a row of dots  
formed in a main scan direction by a predetermined light  
beam, a row of dots formed by a next light beam is  
shifted in the main scan direction,

in the second pattern, with respect to the row of  
25 dots formed in the main scan direction by the

predetermined light beam, the row of dots formed by the next light beam is shifted in the main scan direction but in a direction opposite to a shift direction of the first pattern,

5        said evaluation chart including a first pattern group which is formed by the first patterns which are repeated in a sub scan direction with a period that is an integer multiple of a total number of the plurality of light beams and are also repeated in the main scan  
10        direction at predetermined intervals, and a second pattern group which is formed by the second patterns which are repeated in the sub scan direction with a period that is an integer multiple of the total number of light beams and are also repeated in the main scan  
15        direction at predetermined intervals.

20                2. The image forming apparatus as claimed in claim 1, further comprising:

              an output section printing the evaluation chart on the image forming surface of the photoconductive body onto a recording medium.

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3. The image forming apparatus as claimed in claim 2, wherein said output section prints the evaluation chart such that, of the plurality of light beams  $B_1, B_2, \dots, B_m$ , where  $B_m \geq 2$ , the first and  
5 second pattern groups formed by the light beams  $B_1$  and  $B_2$ , the first and second pattern groups formed by the light beams  $B_2$  and  $B_3, \dots$ , the first and second pattern groups formed by the light beams  $B_{(m-1)}$  and  $B_m$ , and the  
10 first and second pattern groups formed by the light beams  $B_m$  and  $B_1$  are printed on a single recording medium.

15 4. The image forming apparatus as claimed in claim 1, wherein corresponding first and second pattern groups are arranged adjacent to each other on the evaluation chart.

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5. The image forming apparatus as claimed in claim 1, wherein each first pattern group has a  
25 corresponding second pattern group arranged adjacent

thereto in both the main scan direction and the sub scan direction.

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6. The image forming apparatus as claimed in claim 1, wherein said controller variably controls a number of dots of the row of dots of each of the plurality of light beams when forming the evaluation chart.

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7. The image forming apparatus as claimed in claim 1, wherein said controller variably controls a distance in the main scan direction between the row of dots formed by the predetermined light beam and the row of dots formed by the next light beam when forming the evaluation chart.

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8. The image forming apparatus as claimed in claim 1, wherein said controller variably controls conditions related to forming the dots when forming the evaluation chart.

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9. The image forming apparatus as claimed in claim 1, wherein said controller controls the plurality of light beams to form an evaluation chart having a pattern group of one of the plurality of light beams with a phase which is shifted in advance in the main scan direction, with respect to each of the first pattern group and the second pattern group.

10. The image forming apparatus as claimed in claim 9, further comprising:  
phase correcting amount setting means for setting a phase correcting amount in the main scan direction.

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11. An image forming apparatus comprising:
  - a light source portion emitting a plurality of light beams;
  - a photoconductive body having an image forming
  - 5 surface;
  - a deflecting unit deflecting the plurality of light beams from the light source portion to simultaneously scan the image forming surface of the photoconductive body; and
  - 10 a controller controlling the plurality of light beams to form an evaluation chart on the image forming surface of the photoconductive body,
  - said evaluation chart including first patterns and second patterns,
  - 15 in the first pattern, with respect to a row of dots formed in a main scan direction by a predetermined light beam, a row of dots formed by a next light beam is shifted in the main scan direction,
  - in the second pattern, with respect to the row of
  - 20 dots formed in the main scan direction by the predetermined light beam, the row of dots formed by the next light beam is shifted in the main scan direction but in a direction opposite to a shift direction of the first pattern,
  - 25 said evaluation chart including a first pattern

group which is formed by the first patterns which are repeated in a sub scan direction with a period that is an integer multiple of a total number of the plurality of light beams, and a second pattern group which is  
5 formed by the second patterns which are repeated in the sub scan direction with a period that is an integer multiple of the total number of light beams.

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12. The image forming apparatus as claimed in claim 11, further comprising:

an output section printing the evaluation chart on  
15 the image forming surface of the photoconductive body onto a recording medium.

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13. The image forming apparatus as claimed in claim 11, wherein the first and second pattern groups arranged in the sub scan direction in the evaluation chart are disposed in a scan start side of a scan range  
25 of said deflecting unit.

14. The image forming apparatus as claimed in claim 11, wherein the first and second pattern groups arranged in the sub scan direction in the evaluation chart are disposed in approximately a central portion of  
5 a scan range of said deflecting unit.

10 15. The image forming apparatus as claimed in claim 11, wherein said controller variably controls a number of dots of the row of dots of each of the plurality of light beams when forming the evaluation chart.

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16. The image forming apparatus as claimed in  
20 claim 11, wherein said controller variably controls a distance in the main scan direction between the row of dots formed by the predetermined light beam and the row of dots formed by the next light beam when forming the evaluation chart.

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17. The image forming apparatus as claimed in claim 11, wherein said controller variably controls conditions related to forming the dots when forming the evaluation chart.

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18. The image forming apparatus as claimed in claim 11, wherein said controller controls the plurality of light beams to form an evaluation chart having a pattern group of one of the plurality of light beams with a phase which is shifted in advance in the main scan direction, with respect to each of the first pattern group and the second pattern group.

19. The image forming apparatus as claimed in claim 18, further comprising:

phase correcting amount setting means for setting a phase correcting amount in the main scan direction.

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20. An image forming apparatus comprising:

pattern group generating means for generating on an  
image forming surface of a photoconductive body an  
evaluation chart having a pattern group of one of a  
5 plurality of light beams with a phase which is shifted  
in advance in a main scan direction, with respect to  
each of a first pattern group and a second pattern  
group;

tone measuring means for measuring a tone of the  
10 pattern group in the evaluation chart; and

phase correcting amount setting means for setting a  
phase correcting amount in the main scan direction,  
based on the tone measured by said tone measuring means.

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21. The image forming apparatus as claimed in  
claim 20, further comprising:

20 phase synchronizing signal generating means for  
generating phase synchronizing signals of the plurality  
of light beams, based on the phase correcting amount set  
by said phase correcting amount setting means.

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22. An image forming apparatus comprising:

a pattern group generator generating on an image forming surface of a photoconductive body an evaluation chart having a pattern group of one of a plurality of  
5 light beams with a phase which is shifted in advance in a main scan direction, with respect to each of a first pattern group and a second pattern group;

a tone sensor measuring a tone of the pattern group in the evaluation chart; and

10 a phase correcting amount setting circuit setting a phase correcting amount in the main scan direction, based on the tone measured by said tone sensor.

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23. A computer-readable storage medium which stores a program for causing a computer to carry out an imaging process comprising the procedures of:

20 causing the computer to deflect a plurality of light beams to simultaneously scan an image forming surface of a photoconductive body; and

causing the computer to control the plurality of light beams to form an evaluation chart on the image  
25 forming surface of the photoconductive body,

said evaluation chart including first patterns and second patterns,

in the first pattern, with respect to a row of dots formed in a main scan direction by a predetermined light beam, a row of dots formed by a next light beam is  
5 shifted in the main scan direction,

in the second pattern, with respect to the row of dots formed in the main scan direction by the predetermined light beam, the row of dots formed by the  
10 next light beam is shifted in the main scan direction but in a direction opposite to a shift direction of the first pattern,

said evaluation chart including a first pattern group which is formed by the first patterns which are  
15 repeated in a sub scan direction with a period that is an integer multiple of a total number of the plurality of light beams and are also repeated in the main scan direction at predetermined intervals, and a second pattern group which is formed by the second patterns  
20 which are repeated in the sub scan direction with a period that is an integer multiple of the total number of light beams and are also repeated in the main scan direction at predetermined intervals.

24. A computer-readable storage medium which stores a program for causing a computer to carry out an imaging process comprising the procedures of:

causing the computer to deflect a plurality of  
5 light beams to simultaneously scan an image forming surface of a photoconductive body; and

causing the computer to control the plurality of light beams to form an evaluation chart on the image forming surface of the photoconductive body,

10 said evaluation chart including first patterns and second patterns,

in the first pattern, with respect to a row of dots formed in a main scan direction by a predetermined light beam, a row of dots formed by a next light beam is  
15 shifted in the main scan direction,

in the second pattern, with respect to the row of dots formed in the main scan direction by the predetermined light beam, the row of dots formed by the next light beam is shifted in the main scan direction  
20 but in a direction opposite to a shift direction of the first pattern,

said evaluation chart including a first pattern group which is formed by the first patterns which are repeated in a sub scan direction with a period that is  
25 an integer multiple of a total number of the plurality

of light beams, and a second pattern group which is formed by the second patterns which are repeated in the sub scan direction with a period that is an integer multiple of the total number of light beams.

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25. A computer-readable storage medium which  
10 stores a program for causing a computer to carry out an imaging process comprising the procedures of:

causing the computer to generate on an image forming surface of a photoconductive body an evaluation chart having a pattern group of one of a plurality of  
15 light beams with a phase which is shifted in advance in a main scan direction, with respect to each of a first pattern group and a second pattern group;

causing the computer to measure a tone of the pattern group in the evaluation chart; and

20 causing the computer to set a phase correcting amount in the main scan direction, based on the measured tone.

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